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English Nasal Consonants in the Pronunciation of Polish Learners

This paper was published as part of the Festschrift in honour of Professor Arabski's anniversary. Since Professor Arabski is one of the most important figures in both the history of our Institute and my own academic career, I consider it as the best possible contribution to this volume.
The paper describes the typical realisations of English nasal consonants by Poles, illustrating the scale of negative transfer from L1 into the interlanguage of the learners.

Most English dictionaries as well as popular handbooks of English phonetics for Polish learners, e.g. Bałutowa (1974), Jassem (1971), Reszkiewicz (1984), Arabski (1987), Sobkowiak (2001) traditionally distinguish three nasal consonants. Two of them, i.e. the bilabial and the alveolar are usually neglected in pronunciation courses for Poles as they are regarded similar enough to their Polish counterparts both in perception and articulation, including their positional allophones. The velar nasal, conversely, is considered one of the most serious problems in learning English pronunciation, even though the differences between Polish and English consonantal systems might seem slightly exaggerated. After all, in both languages the status of the velar nasal is not obviously phonemic. The appearance of the sound is rather a result of positional flexibility of the alveolar nasal.[1] The sound regularly appears if /n/ is followed by a velar plosive, sometimes even across morpheme boundaries, where the assimilation is optional (e.g. in western and southern Polish *dziewczynka, konkurencja* or English "conclude" "inconvenient"). Besides, in Polish the velar nasal also appears as partial realization of nasal vowels represented by <ą> and <ę> in spelling. Still, probably all examples in the two languages (except certain French borrowings) display an indication of a velar plosive in their spelling. The restricted distribution of the velar nasal and the fact that it is not as such represented in spelling, which mustn't be ignored in phonological considerations, are clearly arguments against the phonemic status of the consonant in question. Moreover, the wider dis-

[1] Alveolar consonants generally tend to alter their place of articulation more often than others (cf. Cruttenden 2001: 285).

tribution of the sound in English is only a result of the fortis/lenis contrast, which is absent from Polish. In both languages /k/ and /g/ are still pronounced after the nasal except for the word final lenis consonant /g/, which is elided in standard English pronunciation. We could quite safely claim that in Polish the same process might take place if /g/ ever occurred at the end of a Polish word. The fact that it does not has further consequences as no suffix, derivational or inflectional, except those for adjective grading causes /g/ to reappear. In effect, /N/ can also be found in the word final position, before non-velar consonants or even vowels, which is impossible in Polish.[2]

Generally, in both languages, [nasal]+[plosive] clusters tend to be homorganic and word finally the lenis plosive, especially if peripheral, disappears (e.g. "sing" or "climb"). The alveolar cluster is reduced to /n/ before consonants, as in "handsome," "handkerchief," "handbag," and "hand-me-downs," again with possible shift to bilabial or velar articulation. Non-homorganic [nasal]+[plosive] clusters, unless they are morphologically motivated, i.e. with a morpheme boundary between the two sounds, are extremely scarce and there are no Polish words with an alveolar nasal followed by a bilabial plosive (cf. Sobkowiak, 2001: 275). Table 1 below shows examples of the other combinations.

Table 1. Non-homorganic nasal-plosive clusters in English and Polish

Nasal-plosive clusters	English	Polish
/mt/, /md/	dreamt, dumdum, tomtit, humdinger	tamten, komtur, mdlić, mdły
/mk/, /mg/	gymkhana, slumgullion	gromki, podomka, mgła, mglić
/np/, /nb/	tenpins, panpipes, input, inborn	---

The analysis of these non-homorganic clusters also suggests that the bilabial nasal /m/ is more stable, less susceptible to assimilations in both languages. As was mentioned earlier, many speakers say /'tempInz/, /'pΘmpaIps/ or even /'Imbɔ:n/ but probably not */'dɸndɸm/ or */drent/. Likewise, in Polish one does not say */'tantEn/ or */'grɔŋci/ whereas the underlying alveolar nasal, at least within the syllable coda, does become velar before /k/ or /g/ and — in this case already at the word formation stage — bilabial before /p/ or /b/, as in the distribution of the Latinate prefix "co(n)-" in both languages, e.g. English "context," "computer" or Polish *kontekst, komputer*.

Apart from the tendency to homogenise the place of articulation, there is another kind of assimilation, which operates in Polish, leading to negative transfer in English pronunciation. Namely, if a nasal phoneme, either the alveolar consonant or the coda of a falling diphthong (traditionally referred to as nasal vowel) appears

[2] Biedrzycki (1978: 75) gives examples where /k/ or /g/ are not pronounced in rapid Polish speech.

before a fricative consonant, also across a morpheme boundary, it is realized as a nasal semivowel, either /w)/ or / j)/. The rule does not apply to /m/, which is not vocalised. A number of examples are presented in Table 2.

Table 2. Realisations of nasal phonemes between vowels and fricative consonants

1.	2.	3.	4.	5.
ENG /nC/	POL /Vw)C/	POL /Vj)C/	ENG /VmC/	POL /VmC/
chance, lines	szansa,	pański	drums, limes	damski
sense, brains	benzyna, mięso,	żeński, gęś	stems, aims	zemsta
leans	inżynier,	świński	seems, dreams	Jerozolimskie
bronze, coins	wąż, sponsor	koński, siąść	proms, dorms	łakomstwo
cartoons, ruins	kunszt	duński	rooms	rumsztyk
sins, since, sings	rynsztok	młyński	rims	gzyms

Word final nasal vocoids are gradually disappearing from Polish. As Gussmann (2007: 271) writes, "The tendency towards denasalization is very strong in colloquial speech to the extent that the forms with the nasal diphthong sound artificial and stilted. This happens despite the fact that morphological homophony is created." He also observes that the other nasal diphthong, /ɔ̃)/, the one represented by <ą>, is never denasalised "even though no homophony would arise in this case" Gussmann (2007: 271). It must be mentioned though, that the final nasal semivowel is pronounced as bilabial nasal /m/ by many Polish speakers, even before fricatives.

All in all, the Polish word final nasal semivowel /ɔ̃)/ can be used in the pronunciation of English words such as "song," "long" or "strong" but more consistent interference is connected with words such as those presented in Table 2. Polish learners usually pronounce English words in column 1, those with alveolar or velar nasals, with nasal vocoids indicated in columns 2 and 3, while the bilabial nasal /m/ is pronounced with occlusion in Polglish pronunciation as well. It seems that /m/ is only sensitive to /f/ or /v/, before which it can become labiodental in both languages, e.g. in Polish *komfort* or *nimfa* and the corresponding English words "comfort" or "nymph" (cf. Cruttenden 2001:281).

The fact that these differences between Polish and English occur at the subphonemic level, where they are more difficult for learners to observe, makes them even more difficult to grasp than the pronunciation of speech sounds which do not appear in Polish at all. The two differences described above usually result in vocalization of /n/ and /N/ before fricatives and either the failure to delete /g/ after /N/ or deleting it before the place of articulation of the nasal has been changed. This is illustrated by the results of an empirical study presented in the second part of the paper.

The purpose of the study was to find out instances of L1 interference in the realisation of nasal phonemes in various contexts. The problems in focus included the presence of plosion following the articulation of [nasal]+[lenis plosive] clusters, the place of articulation of nasal consonants in those contexts and vocalisation of nasals before fricatives.

The subjects were asked to read a passage in English (see Appendix). The places in focus are shown in bold type. The recordings were compared with the pronunciation of British secondary school students in Cambridge (Grabe, Post and Nolan, 2001). Table 3 below shows the scale of interference in Polish students of English at the beginning and after seven months of phonetic training at a teacher training college.

Table 3. The realization of English nasal phonemes by English and Polish speakers. Polish learners' realisations untypical of native pronunciation in bold face

1.	2.	3.	4.	5.	6.	7.
ENG	o**n**ce	ha**nd**me…	cleani**ng**	2x pri**n**ce	wedding **b**ells	evening **o**f
JE	ns	nm	ŋ	ns	ŋb	ŋg
JI	ns	nm	ŋ	ns	ŋb	ŋ
LH	ns	nm	ŋ	ns	ŋb	ŋ
MF	ns	nm	ŋ	ns	ŋb	ŋ
ER	ns	nm	ŋ	ns	ŋb	ŋ
HB	ns	nm	ŋ	ns	ŋb	ŋ
LP	ns	nm	ŋ	ns	ŋb	ŋ
MA	?ns	nm	ŋ	ns	ŋb	ŋ
MC	ns	nm	ŋ	ns	ŋb	ŋ
PT	ns	ndm	ŋ	ns	ŋb	ŋ
SM	ns	nm	ŋ	ns	ŋb	ŋ
TG	ns	nm	ŋ	ns	ŋb	ŋ
Total	ns—12	nm—11, ndm—1	ŋ—12	ns—12	ŋb—12	ŋ—11 ŋg—1
POL Oct	o**n**ce	ha**nd** me…	cleani**ng**	2x pri**n**ce	wedding **b**ells	evening **o**f
AJ	**ɔ̃s**	**ndm**	**ŋk**	**ɔ̃z ɔ̃z**	ŋb	**ŋg**
AK	ns	**ntm**	ŋ	ns **ɔ̃s**	ŋb	**ŋg**
AO	**ɔ̃z**	**ndm**	**ŋk**	**ɔ̃s ɔ̃s**	**ŋkb**	**k ?**
AS	**ɔ̃s**	**ndm**	ŋ	**ɔ̃s ɔ̃s**	ŋb?	**ŋg**
DK	**ɔ̃z**	**ndm**	**ŋk**	**ɔ̃s ɔ̃s**	ŋb	**k ?**
JK	ns	**ntm**	**ŋk**	ns **ɔ̃s**	**ŋkb**	**k ?**

cont. table 3

1.	2.	3.	4.	5.	6.	7.
LK	**ɷ̃s**	**ndm**	**ŋk**	**ɷ̃s ɷ̃s**	**ŋgb**	**k ʔ**
MB	**ɷ̃z**	nm	**iːI**	**ɷ̃s ɷ̃s**	ŋb	**k ʔ**
MG	**ɷ̃s**	**ndm**	**ŋk**	ns **ɷ̃z**	**ŋgb**	**ŋg**
PS	**ɷ̃s**	**ndm**	**ŋk**	**ɷ̃s ɷ̃s**	**ŋgb**	**g ʔ**
PWA	**ɷ̃z**	**ndm**	**ŋ**	**ɷ̃z ɷ̃z**	ŋb	**ŋ ʔ**
PWO	**ɷ̃s**	$nd^{N}m$	**ŋk**	**ɷ̃s ɷ̃s**	ŋb	**ŋg**
RM	**ɷ̃s**	**ndm**	**ŋk**	**ɷ̃s ɷ̃s**	ŋb	**ŋg**
Total	ns—2 **ɷ̃s—7** **ɷ̃z—4**	nm—1 $nd^{N}m$—1 **ndm—8** **ntm—3**	**ŋ**—3 **ŋk—9** **I—1**	ns—3 ns—0 **ɷ̃s—8 ɷ̃s 10** **ɷ̃z—2** **ɷ̃z—3**	ŋb—8 **ŋg—3** **ŋk—2**	**ŋ**—0 **ŋg—6** **k ʔ—5, g ʔ** **ŋ ʔ—1**
POL May	once	h**and me**…	cleani**ng**	2x prince	wedding **b**ells	evening **of**
AJ	**ɷ̃s**	**ndm**	**ŋk**	**ɷ̃z nz**	ŋb	**g ʔ**
AK	**ɷ̃z**	**ntm**	**ŋ**	ns **ɷ̃s**	ŋb	**ŋg**
AO	**ɷ̃z**	nm	**ŋ**	**ɷ̃s ɷ̃s**	ŋb	**g ʔ**
AS	**ɷ̃s**	nm	**ŋ**	ns **ɷ̃s**	ŋb	**ŋ**
DK	**ɷ̃s**	nm	**ŋk**	ns **ɷ̃s**	ŋb	**ŋ**
JK	**ɷ̃s**	nm	**ŋg**	ns ns	ŋb	**g ʔ**
LK	**ɷ̃s**	**ndm**	**ŋk**	ns ns	ŋb	**k ʔ**
MB	**ɷ̃z**	nm	**ŋ**	**ɷ̃z ɷ̃z**	ŋb	**ŋ**
MG	**ɷ̃s**	nm	**ŋk**	**ɷ̃s ɷ̃z**	ŋb	**ŋ**
PS	**ɷ̃s**	nm	**ŋ**	ns **ɷ̃s**	**ŋgb**	**ŋ**
PWA	**ɷ̃z**	nm	**ŋ**	**ɷ̃z ɷ̃z**	ŋb	**ŋ**
PWO	**ɷ̃s**	nm	**ŋk**	**ɷ̃s ɷ̃s**	ŋb	**ŋg**
RM	**ɷ̃s**	nm	**ŋg**	nz nz	ŋb	**ŋb (no *of*)**
Total	ns—0 **ɷ̃s—9** **ɷ̃z—4**	nm—10 **nd—2** **nt—1**	**ŋ**—6 **ŋk—5** **ŋg—2**	ns—6 ns—2 **ɷ̃s—3 ɷ̃s—6** **ɷ̃z—3** **ɷ̃z—3** **nz—1 nz—2**	ŋb—12 **ŋgb—1**	**ŋ**—6 **g ʔ—3,** **ŋg—2,** **k ʔ—1,** **ŋb—1ʔ**

The pronunciation of English speakers appears really consistent in the tested phrases. Only one person in twelve pronounced "evening of" with weak velar plosion before "of" and another one said "hand-me-downs" with alveolar plosion before "me." All English subjects said "once" and "prince" with alveolar closure before /s/. Moreover, a significant proportion of the few cases of Polish subjects'

'correct' pronunciation of the two words remained doubtful even after the relevant spectrograms had been analysed, whereas there was only one case among the English speakers that might be considered problematic.

Generally, the pronunciation of Polish students shows a lot of variety in the tested material, especially in the articulation of the velar nasal. Among 13 subjects, only three pronounced the word final consonant in "cleaning" without an exploded /k/, while one person left the syllable open, with the front half-close vowel /I/. The velar nasal proved easier before the bilabial stop in "wedding bells," where 8 students pronounced it 'correctly'. The remaining 5 exploded either /g/ (3 cases) or /k/ (2 cases). The prevocalic context for the velar nasal in "evening of" was particularly difficult. The most typical pronunciation there was that with the velar plosive /g/ (6 cases). Five students made a pause between the two words, which resulted in devoicing the plosive at the end of "evening," and one other student retained voicing in it. Just one person pronounced only the velar nasal before the vowel, but still made a pause/glottal stop in that place.

After seven months, the pronunciation of Polish students changed, but some still retained their native articulatory habits. Their development is illustrated in Table 4 below.

Table 4. The realisation of English nasal phonemes by Polish speakers before and after pronunciation practice

Tested fragment	POL (13) Oct 2006	POL (13) May 2007	ENG (12)
o**nce** / ɷ̃)C /	11	13	0
2x pri**nce** / ɷ̃)C /	11.5 (23/2)	7.5 (15/2)	0
ha**nd** me… **/d/**	11	3	1
cleani**ng** **/k/**or **/g/**	9	7	0
weddi**ng** **b**ells **/k/**or **/g/**	5	1	0
evenin**g** **of** **/k/**or **/g/**	12	7	1
plosion after / ŋ / (total)	26 (67%)	15 (38%)	1

The results suggest that the habit of vocalising nasals before fricatives is very strong in Polish learners. The improvement in the word "prince" might be connected with the high vowel before /n/, where it is easier to make a closure. In "once," with a low vowel, the students generally failed to produce such a closure. As for the velar nasal, the number of plosive realisations was reduced from 67% to 38%, which is a considerable reduction, but it must be emphasised that the tendency was not so obvious in intervocalic and especially in the word final positions. It is also interesting that there were no responses with the alveolar nasal /n/ in the final position, which can be heard quite often in the pronunciation of Polish learners.

The results are certainly simplified as the impression on the hearer differs depending on the intensity of the undesirable plosion or the degree of nasalisation of the vowels in "once" and "prince," which is too complex to analyse here. What seems to have been proved by the study is that of the two typical problems with the pronunciation of English nasal sounds it is vocalization, the more difficult one that is usually overlooked or neglected in teaching pronunciation. The pronunciation of the velar nasal, on the other hand, can be improved more in the course of practice, but its difficulty level varies depending on the context. Special attention should be paid to word final and intervocalic positions. There was more improvement in the latter, often regarded more difficult. Such a change is also particularly desirable since the popular Polish pronunciation of "evening of" with two plosions (velar and glottal) seriously affects the fluency of speech.

Finally, it appears that the aspects of English pronunciation discussed here are not vital for communication, but teaching them might improve the students' listening comprehension skills as well as make their articulation of foreign sound sequences easier, more comfortable and also less 'marked' in the ears of their interlocutors.

Appendix

The reading passage (tested elements in bold):
Once upon a time there was a girl called Cinderella. But everyone called her Cinders. Cinders lived with her mother and two stepsisters called Lily and Rosa. Lily and Rosa were very unfriendly and they were lazy girls. They spent all their time buying new clothes and going to parties. Poor Cinders had to wear all their old **hand-me-downs**! And she had to do the **cleaning**!
One day, a royal messenger came to announce a ball. The ball would be held at the Royal Palace, in honour of the Queen's only son, **Prince** William. Lily and Rosa thought this was divine. **Prince** William was gorgeous, and he was looking for a bride! They dreamed of **wedding bells**!
When the **evening of** the ball arrived, Cinders had to help her sisters get ready. They were in a bad mood.

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